



**Investment Office**

P.O. Box 2749

Sacramento, CA 95812-2749

Telecommunications Device for the Deaf - (916) 795-3240

(916) 795-3400

December 15, 2008

**AGENDA ITEM 3c**

**TO: MEMBERS OF THE INVESTMENT COMMITTEE**

**I. SUBJECT:** Risk Management Update

**II. PROGRAM:** Total Fund

**III. RECOMMENDATION:** Information

**IV. ANALYSIS:**

**Background**

Since mid 2007, risk in the financial markets began to increase after approximately four years of relative stability. The increase in market volatility was caused by the sub-prime credit crisis and over leveraging in the financial system resulting in bankruptcies of major investment banks (Bear Stearns, Lehman Brothers) and some commercial banks. Credit markets essentially froze due to concerns about counterparty risk as well as underlying risks in credit instruments. These conditions forced financial markets to fundamentally reassess risk. Investors began to re-price risk with the effect that credit spreads widened dramatically and equity volatility spiked upwards.

The CalPERS Risk Measurement System (RMS) is currently forecasting total fund risk of over 10% compared to less than 8% in January 2007. This forecast is based on trends in historical returns over extended time periods and hence the RMS adjusts gradually to observed risk. As a result, the full effect of large and sudden changes in risk is not captured immediately.

### **CalPERS Forecast Total Risk (Attachment 1)**

This report shows forecast total risk for each asset class and the total fund. RMS forecasts total risk over the next year for the portfolio holdings and benchmark holdings.

The graph shows the time series history of RMS forecast risk for the total fund portfolio looking one year into the future (line with squares) and realized risk based on actual returns for the same one-year period (line with triangles). The portfolio risk forecasts are based on a snapshot of the holdings at that particular time. For example, the portfolio risk forecast of 10.6% is based on the holdings as of September 30, 2008. The realized portfolio risk will be based on the subsequent twelve months of total fund returns. As of September 30, 2007 the 12-month forecast risk was approximately 7.9% and the realized risk for the 12-months through September 2008 is 11%. This increase is the result of both higher volatility within each asset class and higher correlations between the asset classes.

Attachments 2 & 3 summarize the trends in volatilities and correlations for the public asset classes. In Attachment 2 twelve month rolling volatilities for Global Fixed Income and Global Equities moved upwards in September and again in October. Attachment 3 summarizes the twelve month rolling correlations between these two asset classes. Correlations moved up significantly in September and October.

In this period of extreme market stress, nearly all securities declined in value and correlations increased dramatically. In this case, total fund diversification was less effective in cushioning overall portfolio losses.

### **CalPERS Total Fund Tracking Error (Attachment 4)**

This report summarizes the components of the total fund tracking error. Tracking error arises from two active management decisions: asset allocation at the asset class level, and security and sector selection within asset classes. Asset class actual allocations, target allocations and differences are summarized in Attachment 5. The September 30, 2008 forecast tracking error due to asset allocation is 120 basis points. This measure has increased because the asset class ranges have widened.

Lastly, security/sector selection and asset allocation active risk are combined to produce a forecast of total fund tracking error. This measure is also 120 basis points, reflecting the large impact of active asset allocation. The graph shows that both forecast and realized total fund tracking error have increased. The last realized total fund tracking error value of 185 basis points is based on the twelve months of active returns from October 2007 to September 2008.

**Additional Efforts**

The financial markets crisis has highlighted the importance of a comprehensive approach to risk management inclusive of leverage, counterparty and operational risks. The Risk Management Unit is working with all of the asset classes to understand and capture these risks as well as to develop additional risk metrics to augment RMS. Staff expects to develop comprehensive risk management practices by the middle of 2009.

**V. STRATEGIC PLAN:**

Goal VIII, Manage the risk and volatility of assets and liabilities to assure that sufficient funds are available, first, to pay benefits and, second, to minimize and stabilize contributions.

**VI. RESULTS/COSTS:**

This item provides information to the Investment Committee members on the assets and performance of the fund. There are no additional costs associated with this agenda.

---

Teri Kennedy  
Investment Officer III

---

Richard Roth  
Senior Portfolio Manager

---

Farouki Majeed  
Senior Investment Officer

---

Anne Stausboll  
Interim Chief Investment Officer